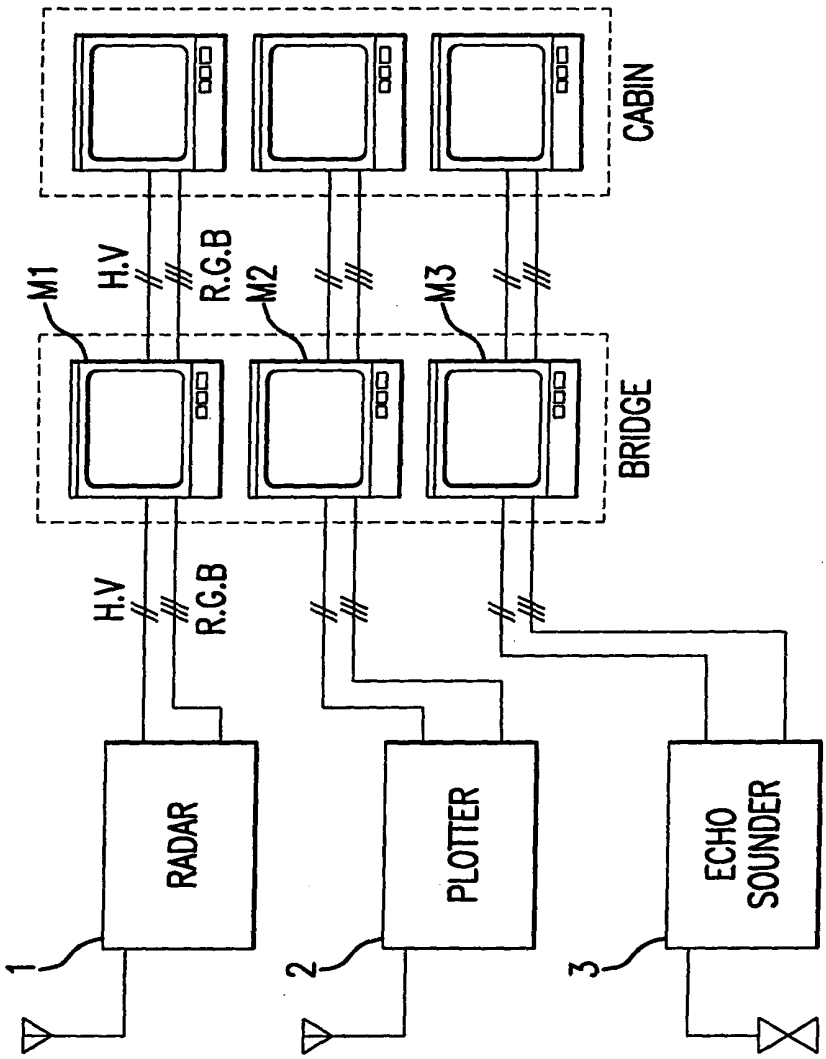

CABIN
M1
H.V
R.G.B
M2
M3
BRIDGE
H.V
R.G.B
RADAR
PLOTTER
ECHO SOUNDER
1
2
3

FIG.1

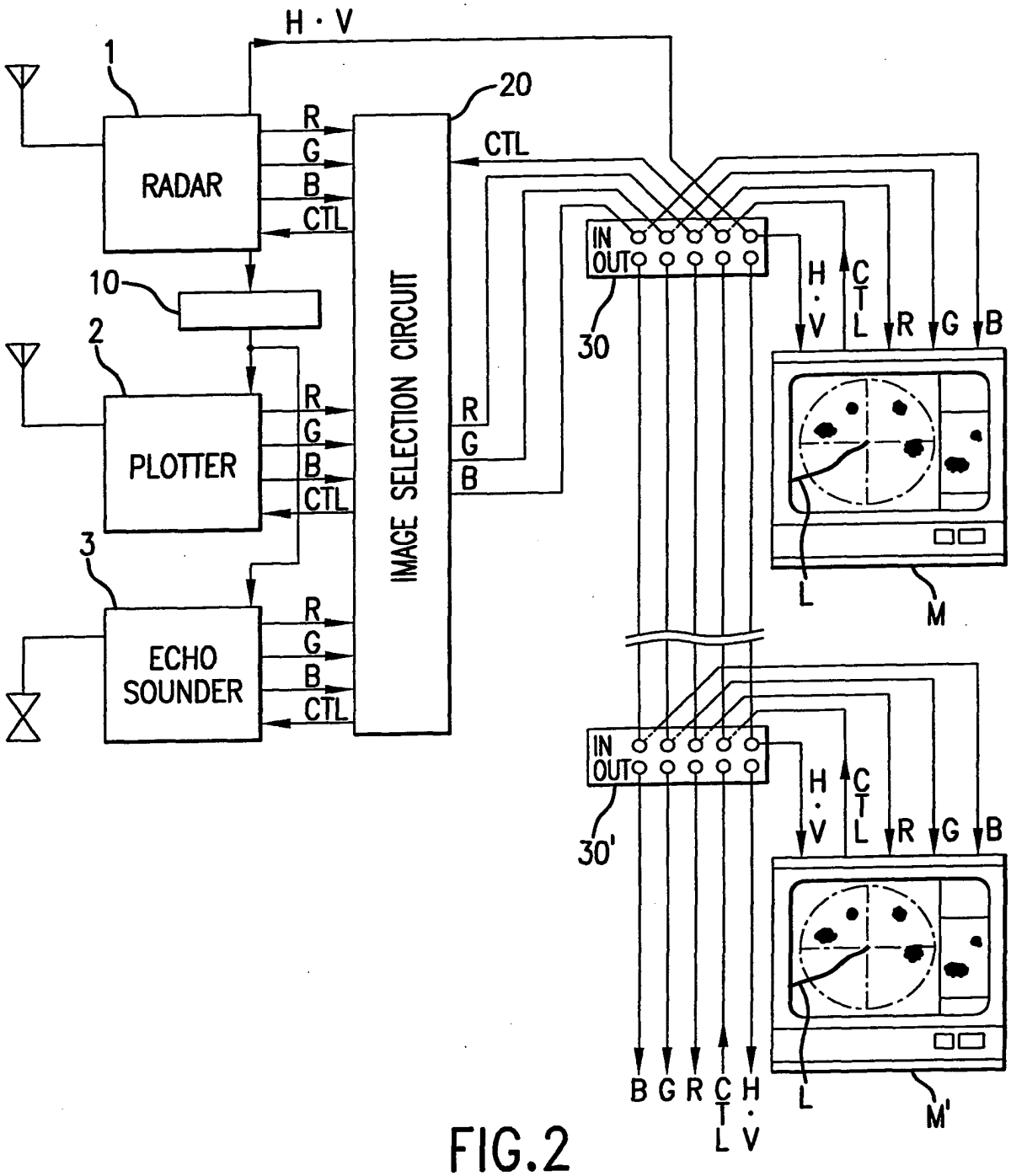

H · V
1
RADAR
R
G
B
CTL
20
CTL
IMAGE SELECTION CIRCUIT
10
2
PLOTTER
3
ECHO SOUNDER
IN
OUT
30
30'
H · V
CTL
R G B
L
M
M'
B G R CTL H · V

FIG.2

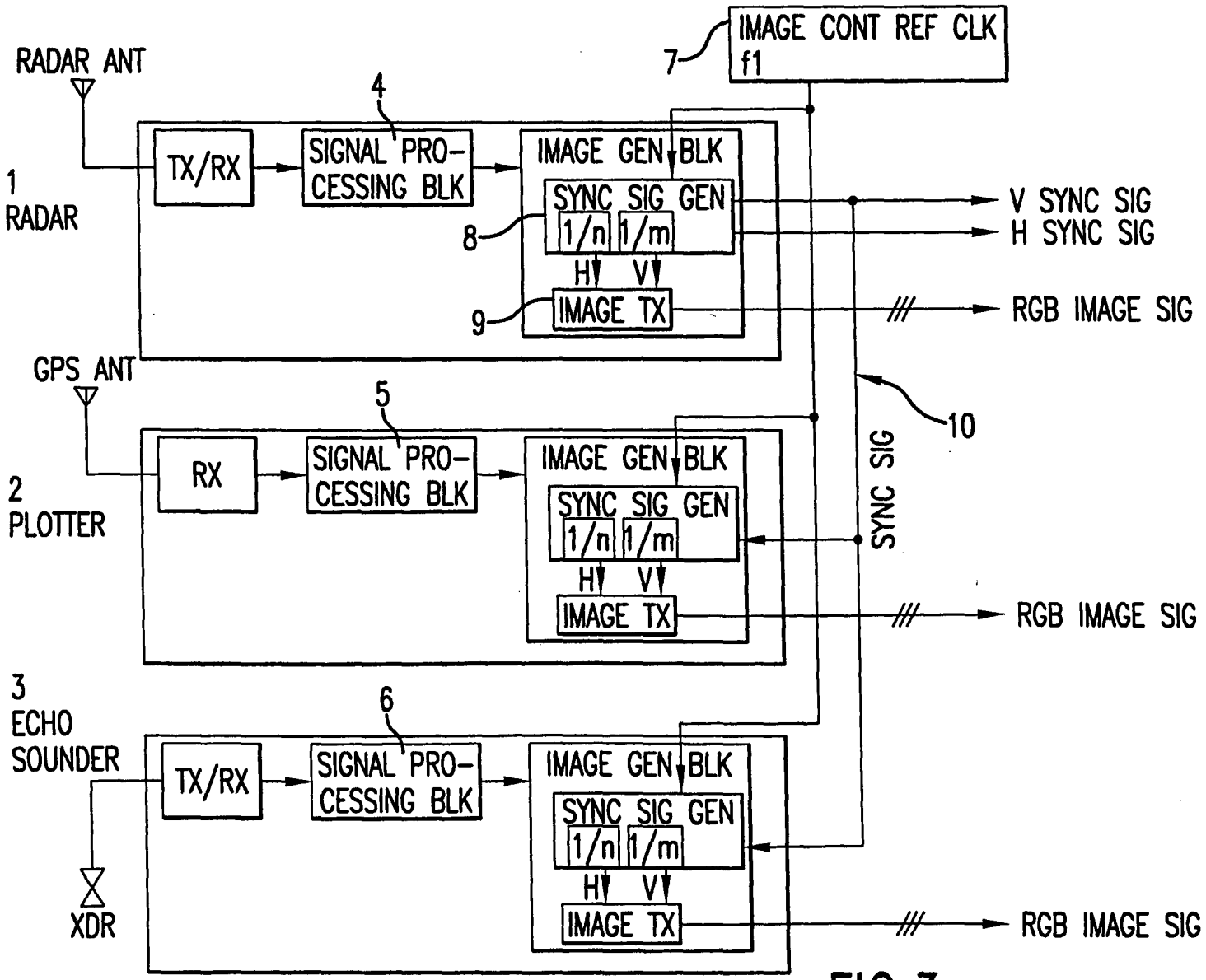

RADAR ANT
1
RADAR
TX/RX
4
SIGNAL PRO-
CESSING BLK
IMAGE GEN BLK
SYNC SIG GEN
1/n
1/m
H
V
8
9
IMAGE TX
7
IMAGE CONT REF CLK
f1
V SYNC SIG
H SYNC SIG
RGB IMAGE SIG
GPS ANT
2
PLOTTER
RX
5
SIGNAL PRO-
CESSING BLK
IMAGE GEN BLK
SYNC SIG GEN
1/n
1/m
H
V
IMAGE TX
RGB IMAGE SIG
10
SYNC SIG
3
ECHO
SOUNDER
XDR
TX/RX
6
SIGNAL PRO-
CESSING BLK
IMAGE GEN BLK
SYNC SIG GEN
1/n
1/m
H
V
IMAGE TX
RGB IMAGE SIG

FIG.3

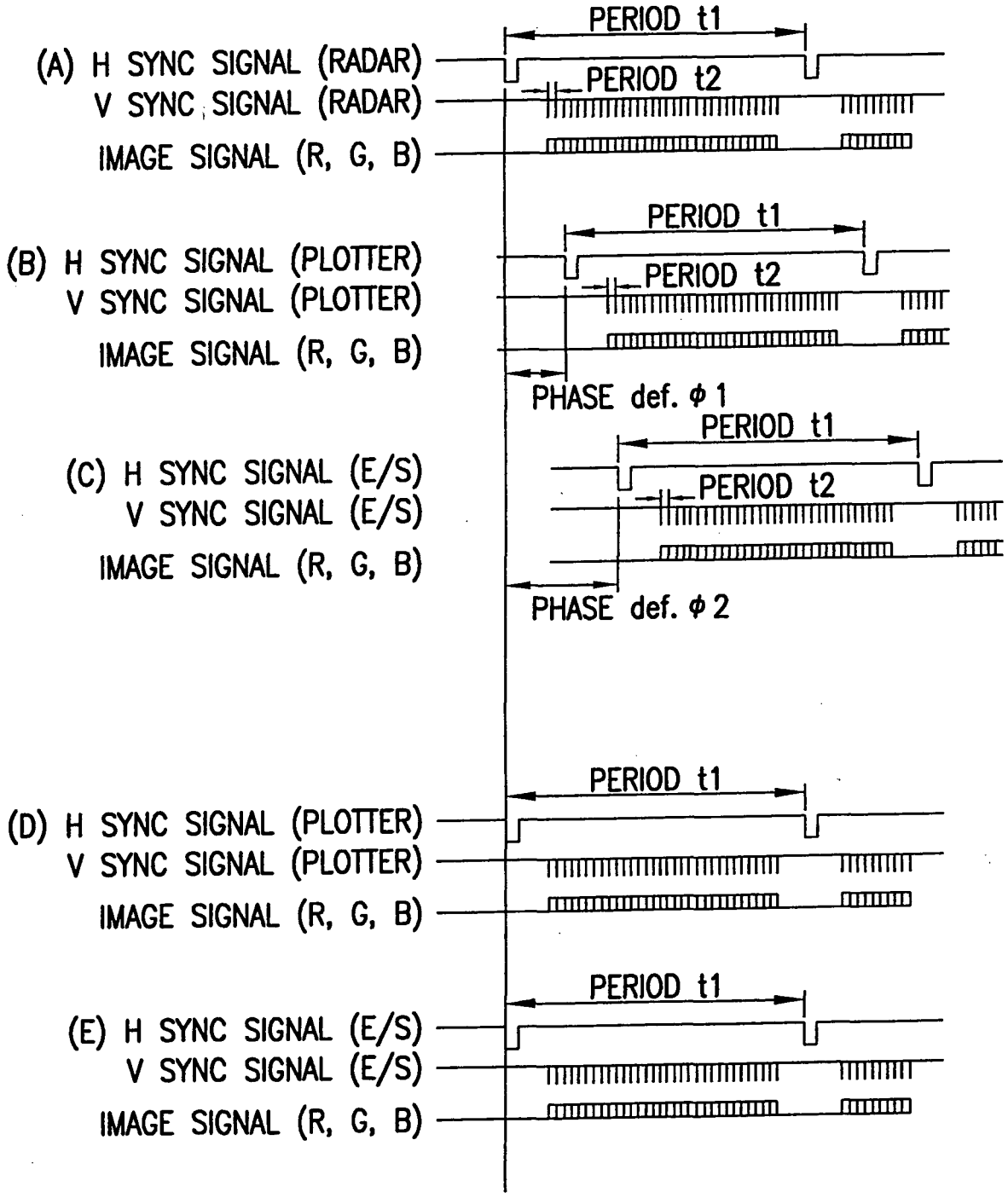

PERIOD t1
(A) H SYNC SIGNAL (RADAR)
PERIOD t2
V SYNC SIGNAL (RADAR)
IMAGE SIGNAL (R, G, B)
PERIOD t1
(B) H SYNC SIGNAL (PLOTTER)
PERIOD t2
V SYNC SIGNAL (PLOTTER)
IMAGE SIGNAL (R, G, B)
PHASE def. φ 1
PERIOD t1
(C) H SYNC SIGNAL (E/S)
PERIOD t2
V SYNC SIGNAL (E/S)
IMAGE SIGNAL (R, G, B)
PHASE def. φ 2
PERIOD t1
(D) H SYNC SIGNAL (PLOTTER)
V SYNC SIGNAL (PLOTTER)
IMAGE SIGNAL (R, G, B)
PERIOD t1
(E) H SYNC SIGNAL (E/S)
V SYNC SIGNAL (E/S)
IMAGE SIGNAL (R, G, B)

FIG.4

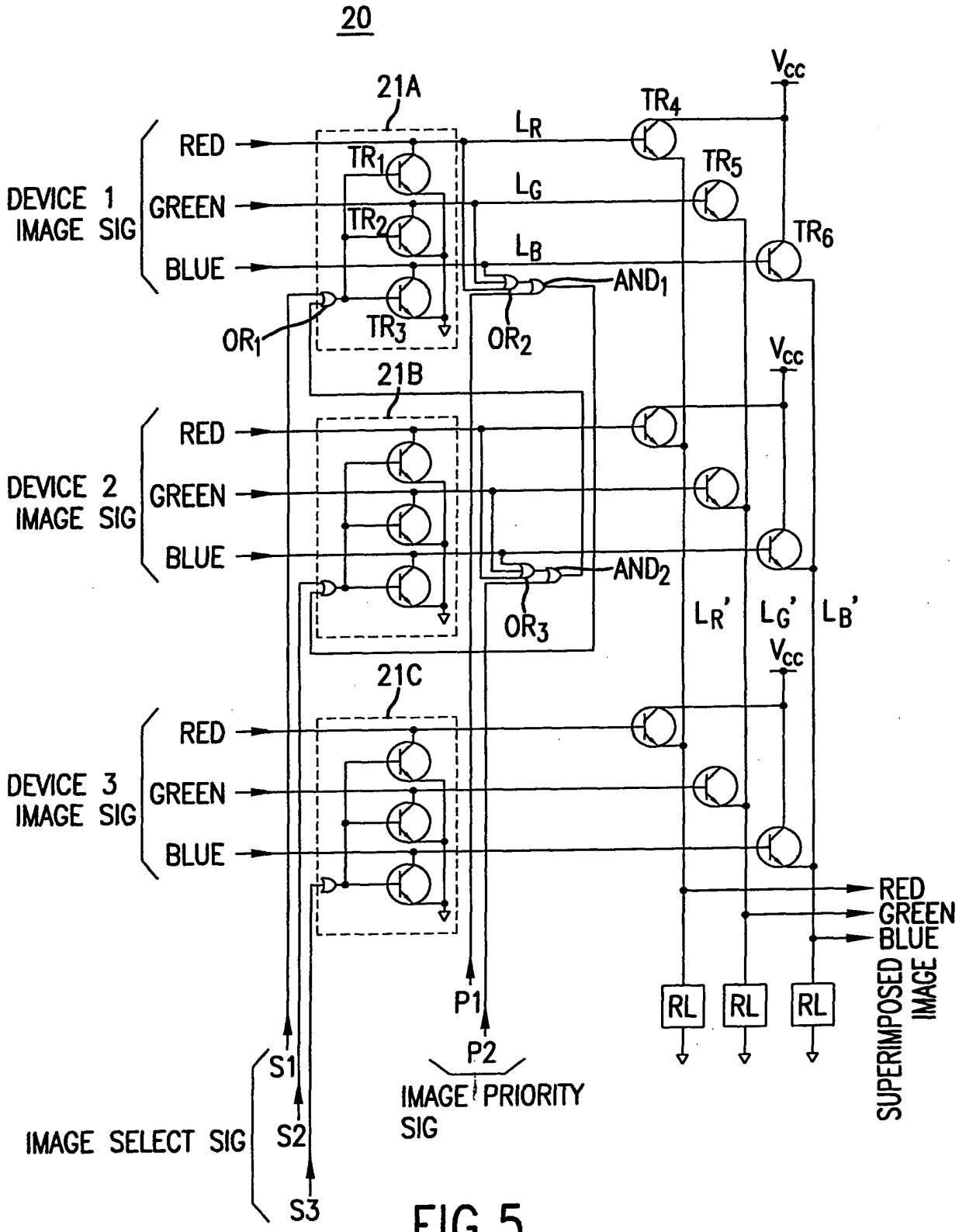

20
21A
21B
21C
RED
GREEN
BLUE
DEVICE 1 IMAGE SIG
DEVICE 2 IMAGE SIG
DEVICE 3 IMAGE SIG
TR1
TR2
TR3
TR4
TR5
TR6
LR
LG
LB
OR1
OR2
OR3
AND1
AND2
Vcc
LR'
LG'
LB'
RL
P1
P2
IMAGE PRIORITY SIG
S1
S2
S3
IMAGE SELECT SIG
SUPERIMPOSED IMAGE

FIG.5

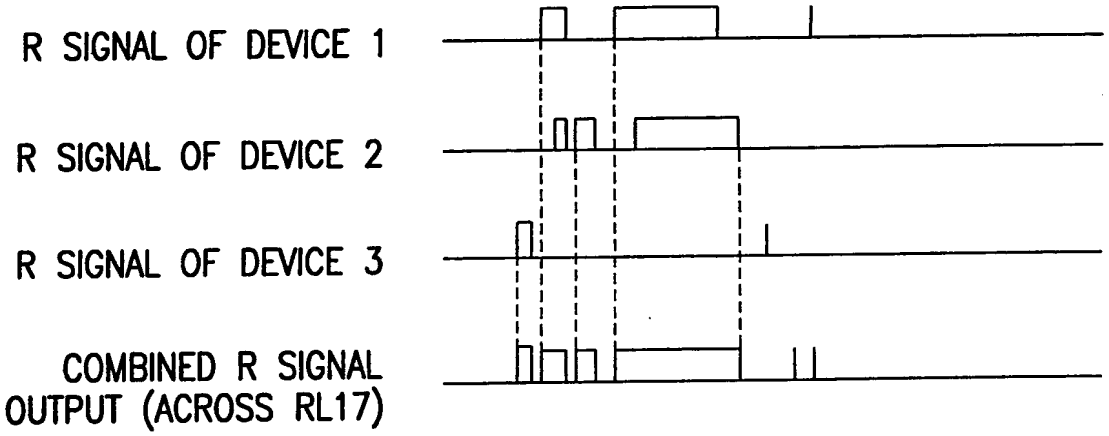

R SIGNAL OF DEVICE 1
R SIGNAL OF DEVICE 2
R SIGNAL OF DEVICE 3
COMBINED R SIGNAL OUTPUT (ACROSS RL17)

FIG.6

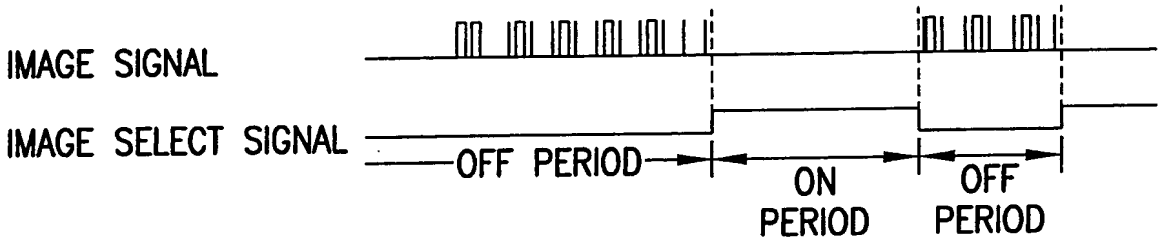


IMAGE SIGNAL
IMAGE SELECT SIGNAL
OFF PERIOD
ON PERIOD
OFF PERIOD

FIG.7

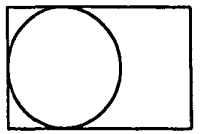
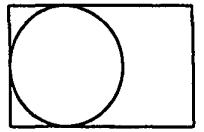
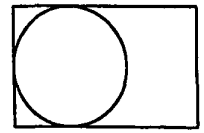
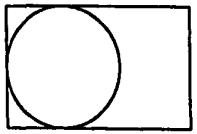
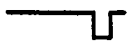
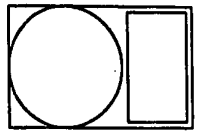
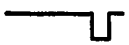
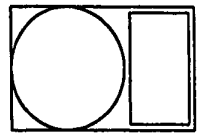
	DISPLAY MODE	IMAGE SELECT SIGNALS			IMAGE PRIORITY SIGNALS		ON-SCREEN DISPLAY
		S1	S2	S3	P1	P2	
①	RADAR PICTURE ONLY		HI	HI	LO	LO	
②	PLOTTER PICTURE ONLY	HI		HI	LO	LO	
③	ECHO SOUNDER PICTURE ONLY	HI	HI		LO	LO	
④	RADAR + PLOTTER (PRIORITY ON RADAR)			HI	HI	LO	
⑤	RADAR + PLOTTER (PRIORITY ON PLOTTER)			HI	LO	HI	
⑥	RADAR + ECHO SOUNDER		HI		LO	LO	
⑦	PLOTTER + ECHO SOUNDER	HI			LO	LO	

FIG.8

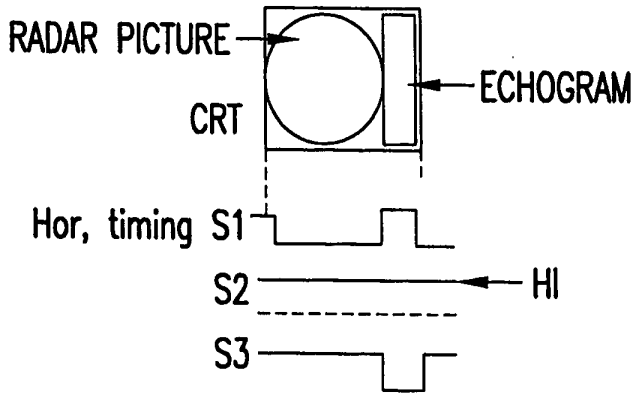


FIG.9

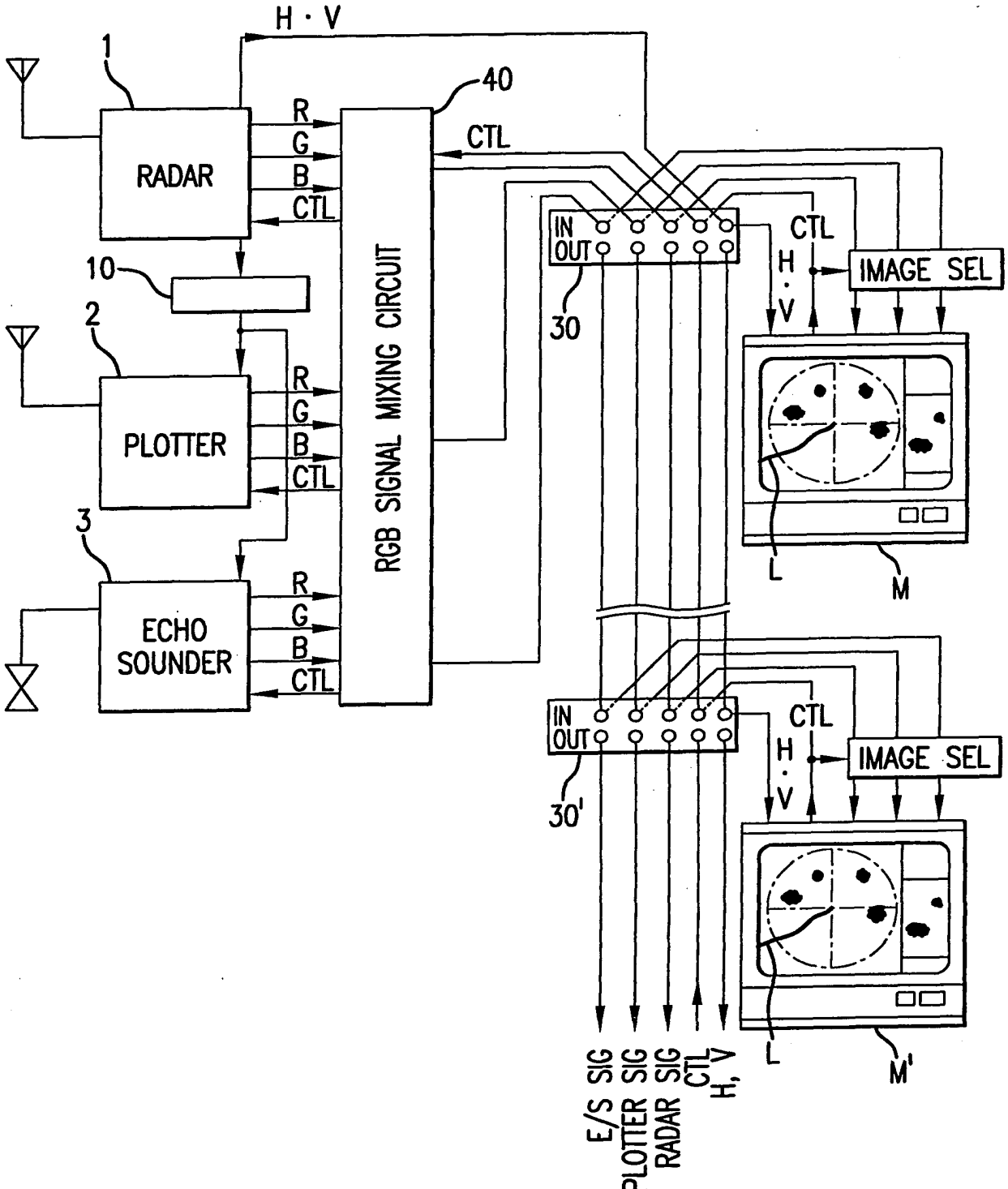

H · V
1
RADAR
R
G
B
CTL
40
CTL
RGB SIGNAL MIXING CIRCUIT
10
2
PLOTTER
3
ECHO SOUNDER
IN
OUT
30
CTL
H · V
IMAGE SEL
L
M
30'
M'
E/S SIG
PLOTTER SIG
RADAR SIG
CTL
H, V

FIG.10

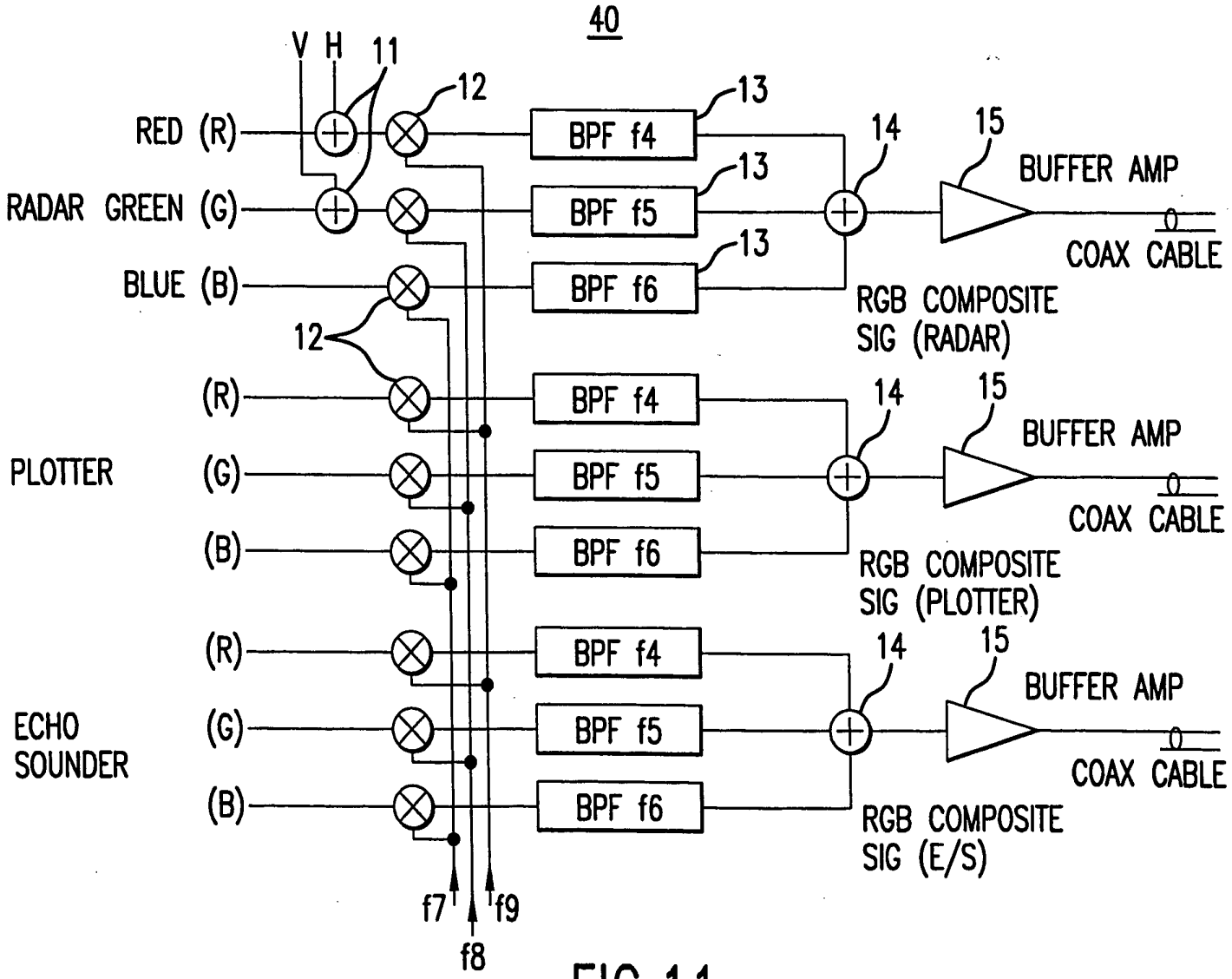

40
V
H
11
12
13
14
15
RED (R)
RADAR GREEN (G)
BLUE (B)
BPF f4
BPF f5
BPF f6
BUFFER AMP
COAX CABLE
RGB COMPOSITE SIG (RADAR)
PLOTTER
(R)
(G)
(B)
RGB COMPOSITE SIG (PLOTTER)
ECHO SOUNDER
RGB COMPOSITE SIG (E/S)
f7
f8
f9

FIG.11

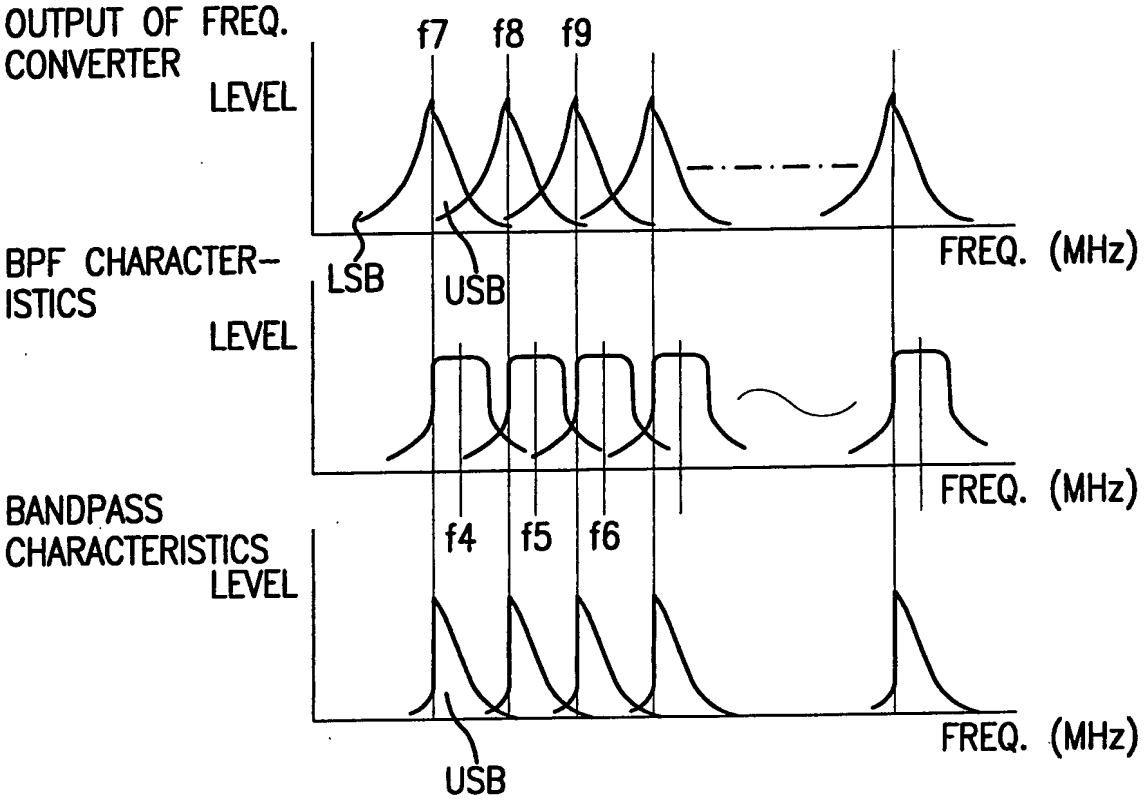

OUTPUT OF FREQ. CONVERTER
LEVEL
f7
f8
f9
FREQ. (MHz)
BPF CHARACTER-ISTICS
LEVEL
LSB
USB
FREQ. (MHz)
BANDPASS CHARACTERISTICS
LEVEL
f4
f5
f6
FREQ. (MHz)
USB

FIG.12

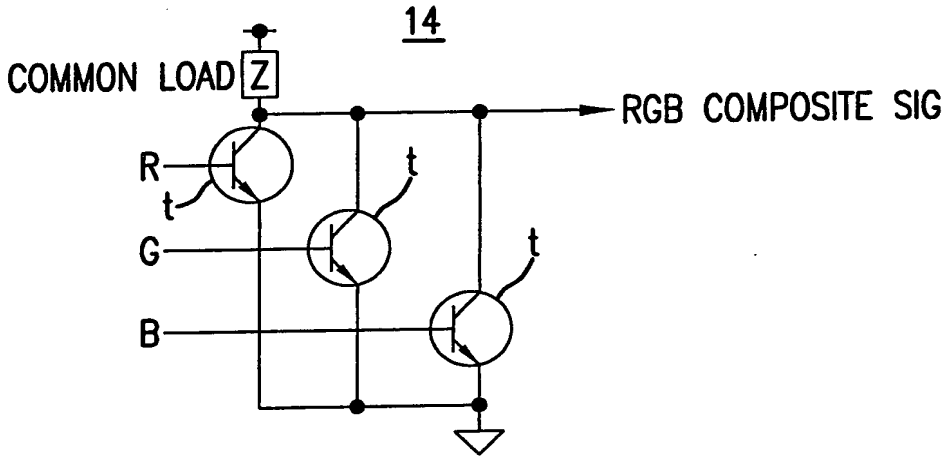

14
COMMON LOAD Z
RGB COMPOSITE SIG
R
G
B
t
t
t

FIG.13

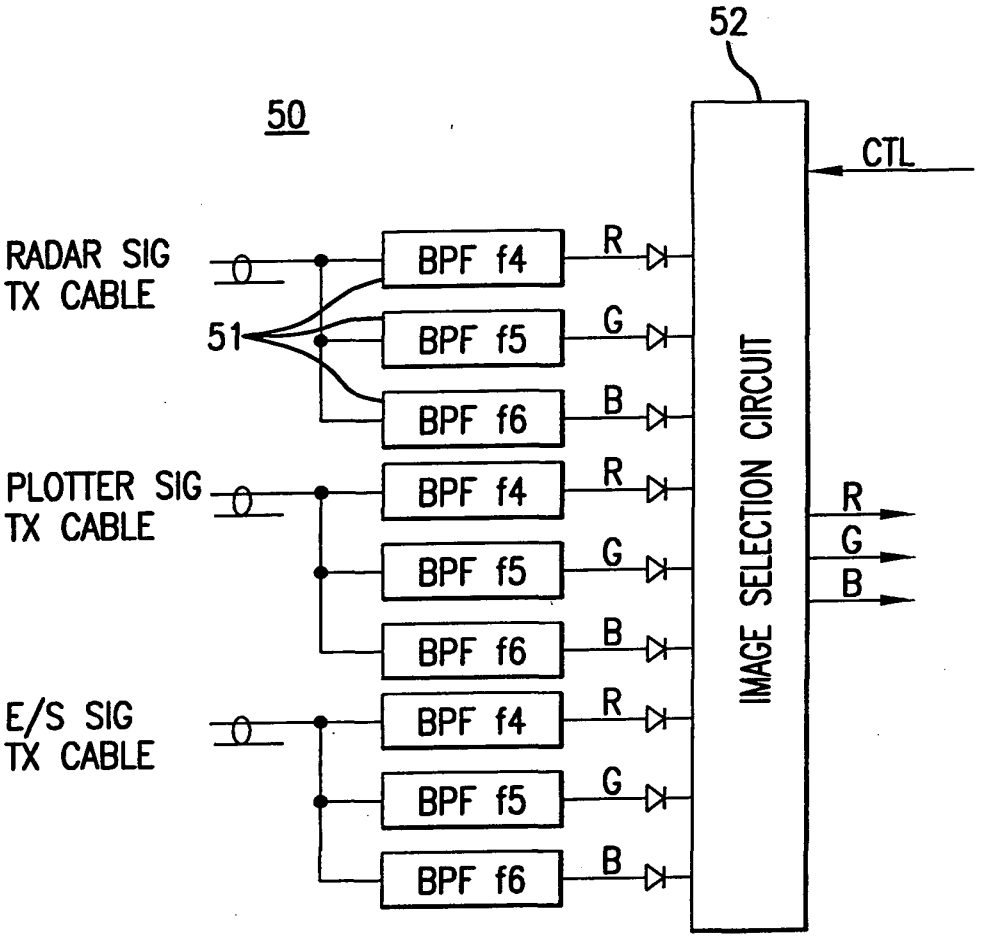

52
50
CTL
RADAR SIG
TX CABLE
51
PLOTTER SIG
TX CABLE
E/S SIG
TX CABLE
BPF f4
BPF f5
BPF f6
BPF f4
BPF f5
BPF f6
BPF f4
BPF f5
BPF f6
R
G
B
R
G
B
R
G
B
IMAGE SELECTION CIRCUIT
R
G
B

FIG.14

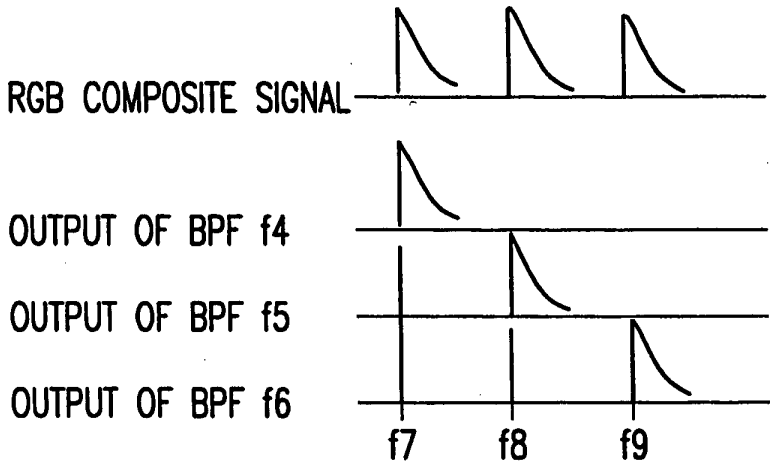

RGB COMPOSITE SIGNAL
OUTPUT OF BPF f4
OUTPUT OF BPF f5
OUTPUT OF BPF f6
f7
f8
f9

FIG.15

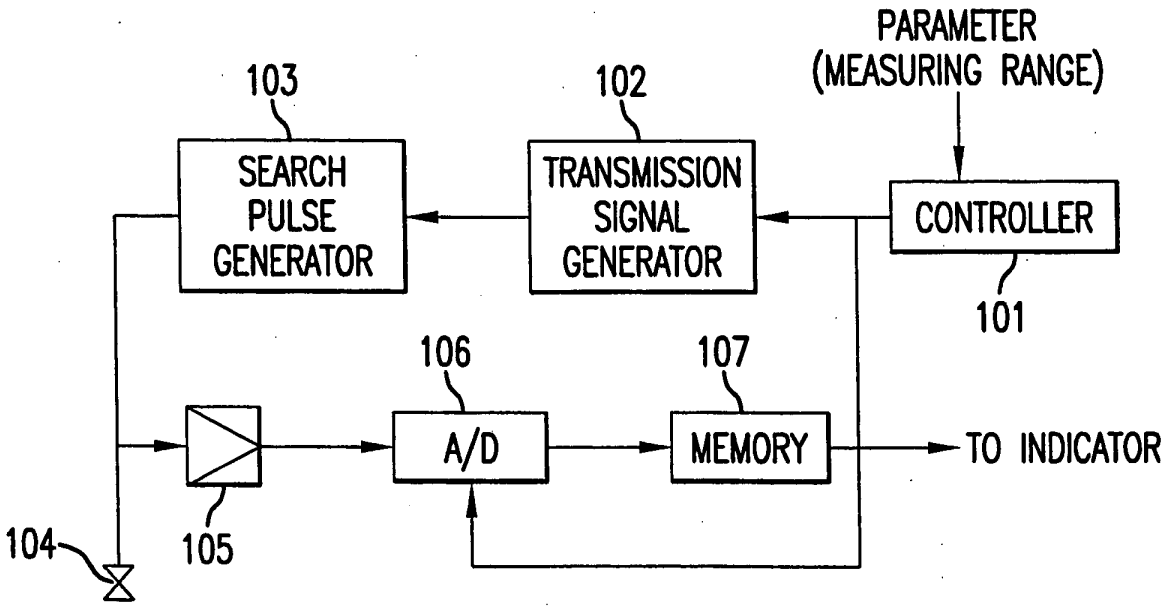

PARAMETER
(MEASURING RANGE)
103
102
SEARCH
PULSE
GENERATOR
TRANSMISSION
SIGNAL
GENERATOR
CONTROLLER
101
106
107
A/D
MEMORY
TO INDICATOR
104
105

FIG.16

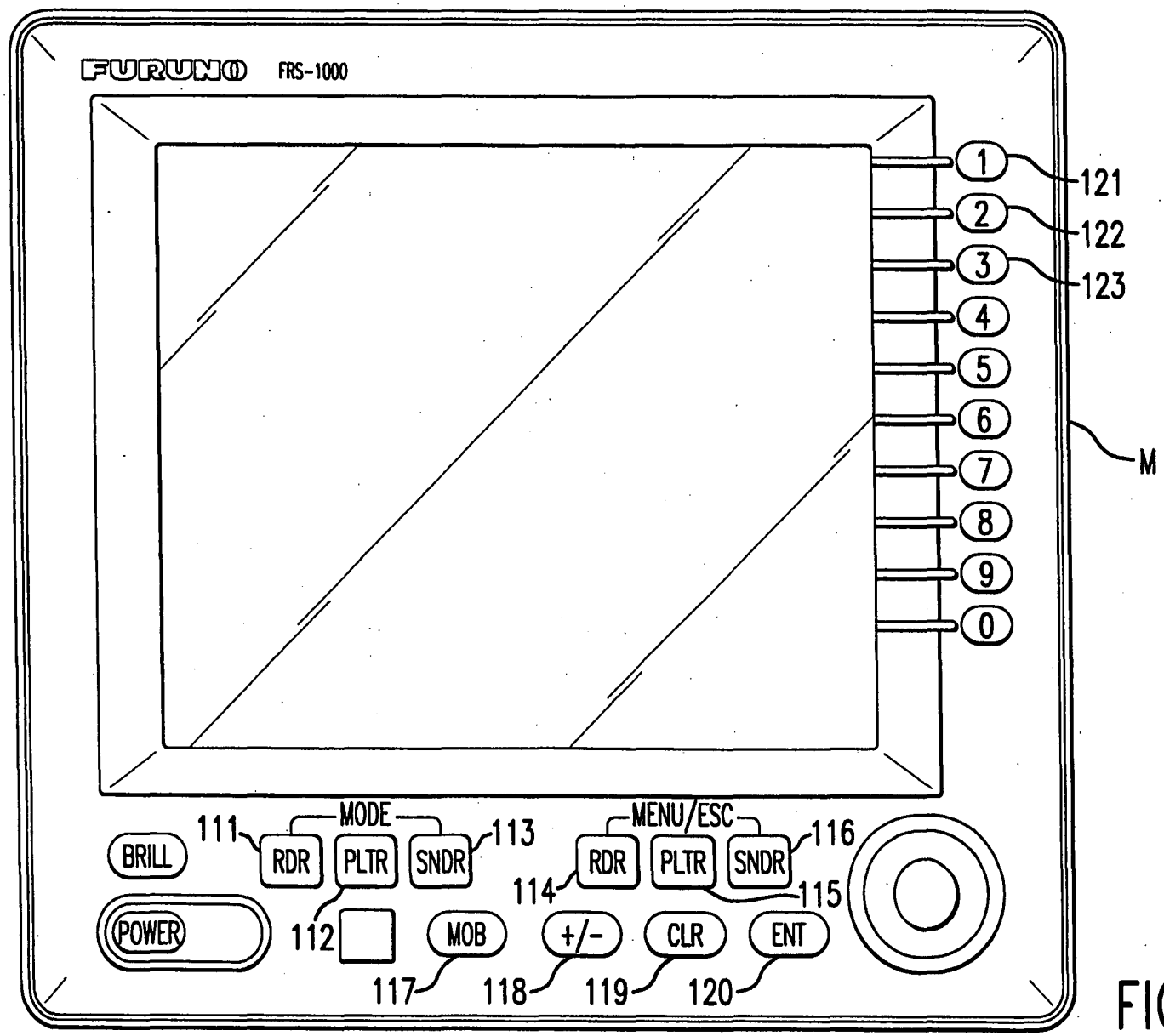

FURUNO
FRS-1000
1
2
3
4
5
6
7
8
9
0
121
122
123
M
MODE
MENU/ESC
111
113
116
BRILL
RDR
PLTR
SNDR
RDR
PLTR
SNDR
114
115
POWER
112
MOB
+/-
CLR
ENT
117
118
119
120

FIG.17